

# Questions and Answers About Anthrax

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## Frequently Asked Questions (FAQ)

### What is anthrax?

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax most commonly occurs in wild and domestic mammalian species (cattle, sheep, goats, camels, antelopes, and other herbivores), but it can also occur in humans when they are exposed to infected animals or to tissue from infected animals or when anthrax spores are used as a bioterrorist weapon.

## Transmission

### How is anthrax transmitted?

Anthrax is not known to spread from one person to another person. *B. anthracis* spores can live in the soil for many years, and humans can become infected with anthrax by handling products from infected animals or by inhaling anthrax spores from contaminated animal products. Anthrax can also be spread by eating undercooked meat from infected animals. It is rare to find infected animals in the United States. Anthrax spores can be used as a bioterrorist weapon, as was the case in 2001, when *Bacillus anthracis* spores had been intentionally distributed through the postal system, causing 22 cases of anthrax, including 5 deaths.

### What are the types of anthrax infection?

Anthrax infection can occur in three forms: cutaneous (skin), inhalation, and gastrointestinal.

- **Cutaneous:** Most (about 95%) anthrax infections occur when the bacterium enters a cut or abrasion on the skin, such as when handling contaminated wool, hides, leather or hair products (especially goat hair) of infected animals. Skin infection begins as a raised itchy bump that resembles an insect bite but within 1-2 days develops into a vesicle and then a painless ulcer, usually 1-3 cm in diameter, with a characteristic black necrotic (dying) area in the center. Lymph glands in the adjacent area may swell. About 20% of untreated cases of cutaneous anthrax will result in death. Deaths are rare with appropriate antimicrobial therapy.
- **Inhalation:** Initial symptoms may resemble a common cold – sore throat, mild fever, muscle aches and malaise. After several days, the symptoms may progress to severe breathing problems and shock. Inhalation anthrax is usually fatal.
- **Gastrointestinal:** The intestinal disease form of anthrax may follow the consumption of contaminated meat and is characterized by an acute inflammation of the intestinal tract. Initial signs of nausea, loss of appetite, vomiting, fever are followed by abdominal pain, vomiting of blood, and severe diarrhea. Intestinal anthrax results in death in 25% to 60% of cases.

### **What are the case fatality rates for the various forms of anthrax?**

Early treatment of cutaneous anthrax is usually curative, and early treatment of all forms is important for recovery. Patients with cutaneous anthrax have reported case fatality rates of 20% without antibiotic treatment and less than 1% with it. Although case-fatality estimates for inhalation anthrax are based on incomplete information, the rate is extremely high, approximately 75%, even with all possible supportive care including appropriate antibiotics. Estimates of the impact of the delay in postexposure prophylaxis or treatment on survival are not known. For gastrointestinal anthrax, the case-fatality rate is estimated to be 25%-60% and the effect of early antibiotic treatment on that case-fatality rate is not defined.

## **Symptoms**

### **What are the symptoms for anthrax?**

These symptoms can occur within 7 days of infection:

- Fever (temperature greater than 100 degrees F). The fever may be accompanied by chills or night sweats.
- Flu-like symptoms.
- Cough, usually a non-productive cough, chest discomfort, shortness of breath, fatigue, muscle aches
- Sore throat, followed by difficulty swallowing, enlarged lymph nodes, headache, nausea, loss of appetite, abdominal distress, vomiting, or diarrhea
- A sore, especially on your face, arms or hands, that starts as a raised bump and develops into a painless ulcer with a black area in the center.

### **How can I know my cold or flu is not anthrax?**

Many human illnesses begin with what are commonly referred to as “flu-like” symptoms, such as fever and muscle aches. However, in most cases anthrax can be distinguished from the flu because the flu has additional symptoms. In previous reports of anthrax cases, early symptoms usually did not include a runny nose, which is typical of the flu and common cold.

## **Preventive/Vaccine**

### **Which antibiotics does CDC recommend for prevention of inhalation anthrax?**

In selecting an antibiotic, we will be guided by the organism's culture and sensitivity results, history of allergic reactions, age and health status factors and antibiotic availability. When no information is available about the antimicrobial susceptibility of the implicated strain of *B. anthracis*, initial therapy with ciprofloxacin or doxycycline is recommended for adults and children, or levofloxacin for adults.

### **If an anthrax event occurs, should people buy and store antibiotics?**

There is no need to buy or store antibiotics, and indeed, it can be detrimental to both the individual and to the community. First, only people who are exposed to anthrax should take antibiotics, and health authorities must make that determination. Second, individuals may not

stockpile or store the correct antibiotics. Third, under emergency plans, the federal government can ship appropriate antibiotics from its stockpile to wherever they are needed.

### **What drugs are FDA-approved for treatment of anthrax?**

Ciprofloxacin, doxycycline and penicillin are FDA-approved for the treatment of anthrax in adults and children.

### **Is there a vaccination for anthrax?**

A protective vaccine has been developed for anthrax; however, it is primarily given to military personnel. Vaccination is recommended only for those at high risk, such as workers in research laboratories that handle anthrax bacteria routinely. The antibiotics used in post exposure prophylaxis are very effective in preventing anthrax disease from occurring after an exposure.

### **Is the anthrax vaccine available to the public?**

A vaccine has been developed for anthrax that is protective against invasive disease, but it is currently only recommended for high-risk populations. CDC and academic partners are continuing to support the development of the next generation of anthrax vaccines.

### **Who should be vaccinated against anthrax?**

The Advisory Committee on Immunization Practices (ACIP) has recommended anthrax vaccination for the following groups:

- Persons who work directly with the organism in the laboratory.
- Persons who work with imported animal hides or furs in areas where standards are insufficient to prevent exposure to anthrax spores.
- Persons who handle potentially infected animal products in high-incidence areas; while incidence is low in the United States, veterinarians who travel to work in other countries where incidence is higher should consider being vaccinated.
- Military personnel deployed to areas with high risk for exposure to the organism.

## **Testing**

### **Can I get screened or tested to find out whether I have been exposed to anthrax?**

There is no screening test for anthrax; there is no test that a doctor can do for you that says you've been exposed to or carry it. The only way exposure can be determined is through a public health investigation. [Nasal swabs](#) and environmental tests, are not tests to determine whether an individual should be treated. These kinds of tests are used only to determine the extent of exposure in a given building or workplace.

### **What is a nasal swab test?**

A nasal swab involves placing a swab inside the nostrils and taking a culture. The CDC and the U.S. Department of Health and Human Services do not recommend the use of nasal swab testing by clinicians to determine whether a person has been exposed to *Bacillus anthracis*, the bacteria responsible for anthrax, or as a means of diagnosing anthrax. At best, a positive result may be interpreted only to indicate exposure; a negative result does not exclude the possibility of exposure. Also, the presence of spores in the nose does not mean that the person has inhalation anthrax. The nose naturally filters out many things that a person breathes, including bacterial

spores. To have inhalation anthrax, a person must have the bacteria deep in the lungs, and also have symptoms of the disease.

Another reason not to use nasal swabs is that most hospital laboratories cannot fully identify anthrax spores from nasal swabs. They are able to tell only that bacteria that resemble anthrax bacteria are present.

**If patients are suspected of being exposed to anthrax, should they be quarantined or should other family members be tested?**

Anthrax is not known to spread from one person to another person. Therefore, there is no need to quarantine individuals suspected of being exposed to anthrax or to immunize or treat contacts of persons ill with anthrax, such as household contacts, friends, or coworkers, unless they also were also exposed to the same source of infection.

## **Treatment**

**What is the treatment for patients with inhalation and cutaneous anthrax?**

CDC made treatment recommendations for cases of inhalation and cutaneous anthrax associated with the bioterrorism attack of 2001. These recommendations can be found in the [MMWR, 10/26/2001; 50\(42\), 909-919](#).

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## **Safety Issues/Mail**

**How can mail get cross-contaminated with anthrax?**

CDC does not have specific studies to address this, however, cross-contamination of the mail could occur during the processing, sorting, and delivery of mail when an envelope comes in contact with an envelope, piece of equipment (e.g., an electronic sorting machine), or other surface that is contaminated with *Bacillus anthracis* spores. In addition, airborne spores in contaminated postal facilities before they were cleaned might play a role.

**When there is a known incident, how can I prevent anthrax exposure from cross-contaminated mail?**

There are no scientifically proven recommendations for preventing exposure. However, there are some common-sense steps people can take:

- Do not open suspicious mail
- Keep mail away from your face when you open it
- Do not blow or sniff mail or mail contents
- Avoid vigorous handling of mail, such as tearing or shredding
- Wash your hands after handling the mail
- Discard envelopes after opening mail.

## **What should people do when they get a letter or package with powder?**

### **Handling of Suspicious Packages or Envelopes\***

- Do not shake or empty the contents of any suspicious package or envelope.
- Do not carry the package or envelope, show it to others or allow others to examine it.
- Put the package or envelope down on a stable surface; do not sniff, touch, taste, or look closely at it or at any contents which may have spilled.
- Alert others in the area about the suspicious package or envelope. Leave the area, close any doors, and take actions to prevent others from entering the area. If possible, shut off the ventilation system.
- WASH hands with soap and water to prevent spreading potentially infectious material to face or skin. Seek additional instructions for exposed or potentially exposed persons.
- If at work, notify a supervisor, a security officer, or a law enforcement official. If at home, contact the local law enforcement agency.
- If possible, create a list of persons who were in the room or area when this suspicious letter or package was recognized and a list of persons who also may have handled this package or letter. Give this list to both the local public health authorities and law enforcement officials.

## **What is the risk for getting anthrax from handling my own mail?**

If there is a risk for inhalation anthrax associated with exposure to cross-contaminated mail, it is very low. For example, about 85 million pieces of mail were processed on the few days in 2001 after envelopes containing *Bacillus anthracis* (addressed to two U.S. senators) passed through the New Jersey and District of Columbia sorting facilities until they were closed. Despite the fact that both of these facilities had evidence of widespread environmental contamination with *B. anthracis* spores and the fact that public health officials had been aggressively looking for anthrax cases, no new cases of anthrax were identified during that time.

## **When the possibility of cross-contamination of the mail exists, should I take antibiotics?**

Preventive antibiotics are not recommended for persons who routinely open or handle mail, either at home or at the workplace. Antimicrobial prophylaxis is recommended only in certain specific situations such as for persons exposed to an air space known to be contaminated with aerosolized *Bacillus anthracis* or for persons in a postal sorting facility in which an envelope containing *B. anthracis* spores was processed. CDC's complete recommendations on antimicrobial prophylaxis are contained in the [November 9, 2001 MMWR](#). Additional recommendations for use of vaccine as part of post-exposure prophylaxis are contained in the [November 15, 2002 MMWR 51\(45\):1024-1026](#).

## **What kinds of anthrax worker safety guidelines have been issued?**

The recommendations are divided into four categories. They are engineering controls, administrative controls, housekeeping controls, and personal protective equipment for workers. The guidelines describe measures that should be implemented in mail-handling/processing sites to prevent potential exposures to *B. anthracis* spores.

- [emergency.cdc.gov/documentsapp/anthrax/10312001/han51.asp](http://emergency.cdc.gov/documentsapp/anthrax/10312001/han51.asp)
- [www.cdc.gov/mmwr/preview/mmwrhtml/mm5043a6.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5043a6.htm)

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